yoke plate 6 such that the poles of the magnet 22 are positioned in the Z-axis direction. By disposing the permanent magnet 22 at the inner leading end on the top surface of the stator yoke plate 6, the magnetic fluxes Φ1 flow upwardly from the top surface of the ring-shaped rotor 7, causing a suction force to act in the Z-axis direction relative to the rotor 7. In this way, it is possible to improve the rigidity of the passive stability axes, i.e., translation in the Z-axis direction, θy gradient about the X-axis, and θx gradient about the Y-axis. Alternatively, the permanent magnet 22 may be disposed on the top surface of the ring-shaped rotor 7 to flow magnetic fluxes upwardly from the top surface of the rotor 7. For reference, in Fig. 12, Φ0 designates a magnetic fluxes for rotation driving and position control.

IN THE CLAIMS:

AMEND claim 1 to read as follows:

1. (Amended) An apparatus for rotating a semiconductor substrate comprising a substrate holder for carrying the substrate thereon, a rotor for directly or indirectly supporting the substrate holder, a magnetic floating mechanism for magnetically floating and supporting the rotor in a non-contact state, and magnetic rotating mechanism for magnetically rotating the rotor, wherein

the magnetic floating mechanism and magnetic rotating mechanism are formed as a single integral unit structure,

the unit structure includes a first set of windings for generating a magnetic field to provide the rotor with a rotating force, and a second set of windings for generating a magnetic field to float

and support the rotor at a predetermined position,

the first and second sets of windings are disposed on a single yoke plate made of a magnetic material,

wherein said single yoke plate is the only yoke plate employed to wind said first and second sets of windings.